



## Academic Course Specification Form

### استمارة توصيف المقرر الأكاديمي

#### القسم الخاص بالطالب Section Concerning the Student

1. Course Code:	MATHS 473	1. رمز المقرر:
2. Course Title	Loss Models I	2. اسم المقرر:
3. College:	College of Science	3. الكلية:
4. Department:	Department of Mathematics	4. القسم:
5. Academic Program:	B.Sc. in Actuarial Science	5. البرنامج الأكاديمي:
6. Course Credits:	3-0-3	6. عدد الساعات المعتمدة:
7. Course NQF Level	8	7. مستوى المقرر وفقاً للإطار الوطني للمؤهلات:
8. Notional Hours:	133	8. عدد الساعات الافتراضية:
9. NQF Credits	13	9. عدد الساعات المعتمدة للمقرر وفقاً للإطار الوطني للمؤهلات:
10. Prerequisite:	STAT 372	10. المتطلب المسبق للمقرر:
11. Lectures Timing & Location:	TBA	11. وقت المحاضرة ومكانها:
12. General Mode of Teaching and Learning	Tranditional تقليدي	12. النمط العام للتعليم والتعلم:
13. Course Coordinator:	TBA	13. منسق المقرر:
14. Course Instructor:	TBA	14. مدرس المقرر:
15. Office Hours and Location:	TBA	15. الساعات المكتبية ومكانها:
16. Instructor's Email:	TBA	16. البريد الإلكتروني لمدرس المقرر:
17. Academic Year:		17. السنة الأكاديمية:
18. Semester:	First Semester الفصل الأول	18. الفصل الدراسي:

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University of Bahrain – Quality Assurance & Accreditation Center - Academic Course Specification Form  
May 2024

Changing any elements of the form is strictly prohibited.  
يرجى عدم تغيير أي عنصر من عناصر الاستمارة

19. Textbook(s):	19. الكتب الدراسية للمقرر:										
<ul style="list-style-type: none"> <li>■ Loss Models: From Data to Decisions, (Fifth Edition), 2019, by Klugman, S.A., Panjer, H.H. and Willmot, G.E., Wiley, ISBN: 978-1-119-52378-9</li> <li>■ Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance, 2020, (Fourth Edition), Brown, Robert L., Robert L. Brown, and Leon R. Gottlieb, Winsted, Connecticut : ACTEX Publications, Inc, ISBN 13-9781625424747</li> </ul>											
20. References:	20. المراجع:										
21. Other learning resources used (e.g. e-Learning, field visits, periodicals, software, etc.):	21. مصادر أخرى ( مثال : التعلم الالكتروني، زيارات ميدانية، دورات، برامج كمبيوتر، الخ.... )										
<ul style="list-style-type: none"> <li>■ ACTEX E-learning: <a href="https://www.actexamdriver.com/goal/">https://www.actexamdriver.com/goal/</a></li> <li>■ Infinite Actuaries: <a href="https://www.theinfiniteactuaries.com">https://www.theinfiniteactuaries.com</a></li> <li>■ Coaching Actuaries: <a href="https://coachingactuaries.com">https://coachingactuaries.com</a></li> </ul>											
22. Course Description (as published in the College Catalogue):	22. توصيف المقرر ( حسبما ورد في دليل الكلية):										
This course introduces students to the construction and evaluation of actuarial models. Topics include measures of risk, characteristics of actuarial models, severity models, frequency models and aggregate loss models.											
23. Course Intended Learning Outcomes (3 to 5 CILOs):	23. مخرجات التعلم للمقرر (CILOs) (3 إلى 5 مخرجات تعليمية):										
1. Identify the characteristics of commonly used severity distributions.											
2. Use of common frequency distributions and aggregate models.											
3. Evaluate the effect of coverage modification on severity, frequency, and aggregate models.											
4. Analyze parametric models of severity, frequency, and aggregation for pricing purpose.											
5. Formulate estimation problems for short term insurance policy.											
24. Course Assessment Percentages (As per Regulations of Study and Examination at the University of Bahrain):	24. أساليب التقويم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):										
ASSIGNMENTS	20%										
TEST#1	20%										
TEST#2	20%										
EXAM	40%										
Total	100%										
There should be at least two assignments per semester so that each won't exceed 10% of the total course grade.											
25. Description of Topics Covered:	25. وصف الموضوعات التي ينبغي تناولها:										
<table border="1"> <thead> <tr> <th style="text-align: center;">Topic Title (e.g. chapter/experiment title) الموضوع</th> <th style="text-align: center;">Description التفصيل</th> </tr> </thead> <tbody> <tr> <td>Ch. 3: Basic Distributional Quantities</td> <td>Moment calculation. Comparison of some basic actuarial models. Risk Measures</td> </tr> <tr> <td>Ch. 5: Continuous Models</td> <td>Classifications of models. Creation of new models based on complexity of actuarial problems.</td> </tr> <tr> <td>Ch. 8: Frequency and Severity with Coverage Modifications</td> <td>From the function of random variables to applications in insurance</td> </tr> <tr> <td>Ch. 9: Aggregate Loss Models</td> <td>Computing the total amount paid in all claims within a given period of time for a given set of insurance contracts.</td> </tr> </tbody> </table>	Topic Title (e.g. chapter/experiment title) الموضوع	Description التفصيل	Ch. 3: Basic Distributional Quantities	Moment calculation. Comparison of some basic actuarial models. Risk Measures	Ch. 5: Continuous Models	Classifications of models. Creation of new models based on complexity of actuarial problems.	Ch. 8: Frequency and Severity with Coverage Modifications	From the function of random variables to applications in insurance	Ch. 9: Aggregate Loss Models	Computing the total amount paid in all claims within a given period of time for a given set of insurance contracts.	
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26. Weekly Schedule			26. الجدول الأسبوعي:	
Week الإسبوع	Date التاريخ	Topics Covered المواضيع المعروضة	CILOs المخرجات التعلمية للمقرر (CILOs)	Teaching/Assessment Mode and Method منهجية ونمط التدريس/التقييم
01		Ch. 3: Basic Distributional Quantities 3.5 Measures of Risk 3.5.1 Introduction 3.5.2 Risk Measures and Coherence 3.5.3 Value at Risk 3.5.4 Tail Value at Risk	1	Traditional Teaching تدريس تقليدي
02		Ch. 5: Continuous Models 5.1 Introduction 5.2 Creating New Distributions 5.2.1 Multiplication by a Constant	1	
03		Ch. 5: Continuous Models 5.2.2 Raising to a Power 5.2.3 Exponentiation 5.2.4 Mixing	1	
04		Ch. 5: Continuous Models 5.2.5 Frailty Models 5.2.6 Splicing	2	
05		Ch. 8: Frequency and Severity with Coverage Modifications 8.1 Introduction 8.2 Deductibles	2	
06		Ch. 8: Frequency and Severity with Coverage Modifications 8.3 The Loss Elimination Ratio and the Effect of Inflation for Ordinary Deductibles	2	
07		Ch. 8: Frequency and Severity with Coverage Modifications 8.4 Policy Limits	3	
08		Ch. 8: Frequency and Severity with Coverage Modifications 8.5 Coinsurance, Deductibles, and Limits 8.6 The Impact of deductible on Claims Frequency (Read only)	3	
09		Ch. 9: Aggregate Loss Models 9.1 Introduction 9.2 Model Choices	4	
10		9.3 The Compound Model for Aggregate Claims 9.3.1 Probabilities and Moments 9.3.2 Stop-Loss Insurance 9.4 Analytic Results (Read only)	4	
11		9.5 Computing the Aggregate Claims Distribution 9.6 The Recursive Method 9.6.1 Applications to Compound Frequency Models (Read only)	4	
12		9.6.2 Underflow/Overflow Problems 9.6.3 Numerical Stability	5	
13		9.6.4 Continuous Severity 9.6.5 Constructing Arithmetic Distributions 9.7 The Impact of Individual Policy Modifications on Aggregate Payments	5	
14		9.7 The Impact of Individual Policy Modifications on Aggregate Payments	5	
15		9.7 The Impact of Individual Policy Modifications on Aggregate Payments	5	

<p><b>27. Academic Integrity Statement:</b></p> <p>Students are to observe the highest level of honesty and academic ethics in pursuit of their academic goals as per UOB Regulations of Student Conduct and Academic Integrity, <a href="#">Anti-plagiarism Policies</a>, and <a href="#">Students' Rights and Responsibilities Handbook</a>. The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious and will be dealt with as per the aforementioned policies and regulations.</p>	<p><b>27. بيان النزاهة الأكاديمية:</b></p> <p>يُعتبر الصدق والنزاهة عنصران أساسيان في العملية الأكاديمية. حيث يُتوقع من الطلاب خلال سعيهم لتحقيق أهدافهم الأكاديمية التحلي بالأمانة والأخلاق في جميع الأوقات، وذلك وفقاً للوائح والأنظمة الخاصة بطلبة جامعة البحرين، بالإضافة إلى <a href="#">دليل حقوق الطلبة وواجباتهم</a>، وكما جاء في <a href="#">سياسة الانتحال الخاصة بجامعة البحرين</a>. حيث سيتم التعامل مع أي انتهاك للنزاهة الأكاديمية بحسب ما تنص عليه السياسات والأنظمة السابق ذكرها.</p>
<p><b>28. Attendance and Absence Regulations:</b></p> <p>Students are required to adhere to regular attendance for class lectures and practical sessions, as determined by the nature of the course, as per Article (33), of Regulations of <a href="#">Study and Examination at the University of Bahrain</a>.</p>	<p><b>28. نظام الحضور والغياب:</b></p> <p>يُتوقع من الطلاب الالتزام بالحضور المنتظم للساعات الصفية والعملية بحسب طبيعة المقرر، وفقاً للمادة (33)، من <a href="#">نظام الدراسة والامتحانات في جامعة البحرين</a>.</p>